

Amendment to the Claims

The following listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1-33. (Canceled)

34. (Currently amended) A composition comprising:

dead *E. coli* comprising at least one modified allergen whose amino acid sequence is identical to that of a wild-type allergen, except that the modified allergen has at least one mutation in an IgE site such that the modified allergen has a reduced ability to bind to or cross-link IgE as compared with the wild-type allergen, wherein the modified allergen is encapsulated inside the dead *E. coli*; and

a pharmaceutically acceptable carrier, wherein the wild-type allergen is selected from the group consisting of the allergens presented in the following Table:

ALLERGEN SOURCE	SYSTEMATIC AND ORIGINAL NAMES	MW kDa	SEQ	ACCESSION NO. OR REFERENCES
WEED POLLENS				
<i>Asterales</i>				
Ambrosia artemisiifolia (short ragweed)	Amb a 1; antigen E	38	C	8. Griffith, I.J., J. Pollock, D.G. Klapper, B.L. Rogers, and A.K. Nault. 1991. Sequence polymorphism of Amb a I and Amb a II, the major allergens in Ambrosia artemisiifolia (short ragweed). Int. Arch. Allergy Appl. Immunol. 96:296-304. 20. Rafnar, T., I. J. Griffith, M. C. Kuo, J. F. Bond, B. L. Rogers, and D.G. Klapper. 1991. Cloning of Amb a I (Antigen E), the major allergen family of short ragweed pollen. J. Biol. Chem. 266: 1229-1236.
	Amb a 2; antigen K	38	C	8. Griffith, I.J., J. Pollock, D.G. Klapper, B.L. Rogers, and A.K. Nault. 1991. Sequence polymorphism of Amb a I and Amb a II, the major allergens in Ambrosia artemisiifolia (short ragweed). Int. Arch. Allergy Appl. Immunol. 96:296-304. 21. Rogers, B.L., J.P. Morgenstern, I.J. Griffith, X.B. Yu, C.M. Counsell, A.W. Brauer, T.P. King, R.D. Garman, and M.C. Kuo. 1991. Complete sequence of the

				allergen Amb a II: recombinant expression and reactivity with T cells from ragweed allergic patients. J. Immunol. 147:2547-2552.
	Amb a 3; Ra3	11	C	22. Klapper, D.G., L. Goodfriend, and J.D. Capra. 1980. Amino acid sequence of ragweed allergen Ra3. Biochemistry 19:5729-5734.
	Amb a 5; Ra5	5	C	11. Metzler, W. J., K. Valentine, M. Roebber, D. G. Marsh, and L. Mueller. 1992. Proton resonance assignments and three-dimensional solution structure of the ragweed allergen Amb a V by nuclear magnetic resonance spectroscopy. Biochemistry 31:8697-8705. 23. Ghosh, B., M.P. Perry, T. Rafnar, and D.G. Marsh. 1993. Cloning and expression of immunologically active recombinant Amb a V allergen of short ragweed (<i>Ambrosia artemisiifolia</i>) pollen. J. Immunol. 150:5391-5399.
	Amb a 6; Ra6	10	C	24. Roebber, M., R. Hussain, D. G. Klapper, and D. G. Marsh. 1983. Isolation and properties of a new short ragweed pollen allergen, Ra6. J. Immunol. 131:706-711. 25. Lubahn, B., and D.G. Klapper. 1993. Cloning and characterization of ragweed allergen Amb a VI (abst). J. Allergy Clin. Immunol. 91:338.
	Amb a 7; Ra7	12	P	26. Roebber, M., and D.G. Marsh. 1991. Isolation and characterization of allergen Amb a VII from short ragweed pollen. J. Allergy Clin. Immunol. 87:324.
	Amb a ?	11	C	27. Rogers, B.L., J. Pollock, D.G. Klapper, and I.J. Griffith. 1993. Cloning, complete sequence, and recombinant expression of a novel allergen from short ragweed pollen (abst). J. Allergy Clin. Immunol. 91:339.
Ambrosia trifida (giant ragweed)	Amb t 5; Ra5G	4.4	C	9. Roebber, M., D. G. Klapper, L. Goodfriend, W. B. Bias, S. H. Hsu, and D. G. Marsh. 1985. Immunochemical and genetic studies of Amb t V (Ra5G), an Ra5 homologue from giant ragweed pollen. J. Immunol. 134:3062-3069. 10. Metzler, W. J., K. Valentine, M. Roebber, M. Friedrichs, D. G. Marsh, and L. Mueller. 1992. Solution structures of ragweed allergen Amb t V. Biochemistry 31:5117-5127. 28. Goodfriend, L., A.M. Choudhury, D.G.

				Klapper, K.M. Coulter, G. Dorval, J. DelCarpio, and C.K. Osterland. 1985. Ra5G, a homologue of Ra5 in giant ragweed pollen: isolation, HLA-DR-associated activity and amino acid sequence. Mol. Immunol. 22:899-906.
Artemisia vulgaris (mugwort)	Art v 1	27-29	C	28A. Breitenbach M, pers. comm.
	Art v 2	35	P	29. Nilsen, B. M., K. Sletten, M. O'Neill, B. Smestad Paulsen, and H. van Halbeek. 1991. Structural analysis of the glycoprotein allergen Art v II from pollen of mugwort (Artemisia vulgaris). J. Biol. Chem. 266:2660-2668.
Helianthus annuus (sunflower)	Hel a 1	34	-	29A Jimenez A, Moreno C, Martinez J, Martinez A, Bartolome B, Guerra F, Palacios R 1994. Sensitization to sunflower pollen: only an occupational allergy? Int Arch Allergy Immunol 105:297-307.
	Hel a 2; profilin	15.7	C	Y15210
Mercurialis annua	Mer a 1; profilin	14-15	C	Y13271
GRASS POLLENS				
Poales				
Cynodon dactylon (Bermuda grass)	Cyn d 1	32	C	30. Smith, P.M., Suphioglu, C., Griffith, I.J., Theriault, K., Knox, R.B. and Singh, M.B. 1996. Cloning and expression in yeast Pichia pastoris of a biologically active form of Cyn d 1, the major allergen of Bermuda grass pollen. J. Allergy Clin. Immunol. 98:331-343. S83343
	Cyn d 7		C	31. Suphioglu, C., Ferreira, F. and Knox, R.B. 1997. Molecular cloning and immunological characterisation of Cyn d 7, a novel calcium-binding allergen from Bermuda grass pollen. FEBS Lett. 402:167-172. X91256
	Cyn d 12; profilin	14	C	31a. Asturias JA, Arilla MC, Gomez-Bayon N, Martinez J, Martinez A, and Palacios R. 1997. Cloning and high level expression of Cynodon dactylon (Bermuda grass) pollen profilin (Cyn d 12) in Escherichia coli: purification and characterization of the allergen. Clin Exp Allergy 27:1307-1313. Y08390
Dactylis glomerata (orchard grass)	Dac g 1; AgDg1	32	P	32. Mecheri, S., G. Peltre, and B. David. 1985. Purification and characterization of a major allergen from Dactylis glomerata pollen: The Ag Dg 1. Int. Arch. Allergy Appl. Immunol. 78:283-289.

	Dac g 2	11	C	33. Roberts, A.M., L.J. Bevan, P.S. Flora, I. Jepson, and M.R. Walker. 1993. Nucleotide sequence of cDNA encoding the Group II allergen of Cocksfoot/Orchard grass (<i>Dactylis glomerata</i>), Dac g II. <i>Allergy</i> 48:615-623. S45354
	Dac g 3		C	33a. Guerin-Marchand, C., Senechal, H., Bouin, A.P., Leduc-Brodard, V., Taudou, G., Weyer, A., Peltre, G. and David, B. 1996. Cloning, sequencing and immunological characterization of Dac g 3, a major allergen from <i>Dactylis glomerata</i> pollen. <i>Mol. Immunol.</i> 33:797-806. U25343
	Dac g 5	31	P	34. Klysner, S., K. Welinder, H. Lowenstein, and F. Matthesen. 1992. Group V allergens in grass pollen IV. Similarities in amino acid compositions and amino terminal sequences of the group V allergens from <i>Lolium perenne</i> , <i>Poa pratensis</i> and <i>Dactylis glomerata</i> . <i>Clin. Exp. Allergy</i> 22: 491-497.
<i>Holcus lanatus</i> (velvet grass)	Hol l 1		C	Z27084 Z68893
<i>Lolium perenne</i> (rye grass)	Lol p 1; group I	27		35. Perez, M., G. Y. Ishioka, L. E. Walker, and R. W. Chesnut. 1990. cDNA cloning and immunological characterization of the rye grass allergen Lol p I. <i>J. Biol. Chem.</i> 265:16210-16215. 36. Griffith, I. J., P. M. Smith, J. Pollock, P. Theerakulpisut, A. Avjioglu, S. Davies, T. Hough, M. B. Singh, R. J. Simpson, L. D. Ward, and R. B. Knox. 1991. Cloning and sequencing of Lol p I, the major allergenic protein of rye-grass pollen. <i>FEBS Letters</i> 279:210-215.
	Lol p 2; group II	11		37. Ansari, A. A., P. Shenbagamurthi, and D.G. Marsh. 1989. Complete amino acid sequence of a <i>Lolium perenne</i> (perennial rye grass) pollen allergen, Lol p II. <i>J. Biol. Chem.</i> 264:11181-11185. 37a. Sidoli, A., Tamborini, E., Giuntini, I., Levi, S., Volonte, G., Paini, C., De Lalla, C., Siccardi, A.G., Baralle, F.E., Galliani, S. and Arosio, P. 1993. Cloning, expression, and immunological characterization of recombinant <i>Lolium perenne</i> allergen Lol p II. <i>J. Biol. Chem.</i> 268:21819-21825. X73363

	Lol p 3; group III	11		38. Ansari, A. A., P. Shenbagamurthi, and D. G. Marsh. 1989. Complete primary structure of a Lolium perenne (perennial rye grass) pollen allergen, Lol p III: Comparison with known Lol p I and II sequences. <i>Biochemistry</i> 28:8665-8670.
	Lol p 5; Lol p IX,	31/35		34. Klysner, S., K. Welinder, H. Lowenstein, and F. Matthiesen. 1992. Group V allergens in grass pollen IV. Similarities in amino acid compositions and amino terminal sequences of the group V allergens from Lolium perenne, Poa pratensis and Dactylis glomerata. <i>Clin. Exp. Allergy</i> 22: 491-497. 39. Singh, M. B., T. Hough, P. Theerakulpisut, A. Avjioglu, S. Davies, P. M. Smith, P. Taylor, R. J. Simpson, L. D. Ward, J. McCluskey, R. Puy, and R.B. Knox. 1991. Isolation of cDNA encoding a newly identified major allergenic protein of rye-grass pollen: Intracellular targeting to the amyloplast. <i>Proc. Natl. Acad. Sci.</i> 88:1384-1388.
	Lol p Ib			
	Lol p 11; trypsin	16		39a. van Ree R, Hoffman DR, van Dijk W, Brodard V, Mahieu K, Koeleman CA, Grande M, van Leeuwen WA, Aalberse RC. 1995. Lol p XI, a new major grass pollen allergen, is a member of a family of soybean trypsin inhibitor-related proteins. <i>J Allergy Clin Immunol</i> 95:970-978.
	inh. Related			
Phalaris aquatica (canary grass)	Pha a 1		C	40. Suphioglu, C. and Singh, M.B. 1995. Cloning, sequencing and expression in Escherichia coli of Pha a 1 and four isoforms of Pha a 5, the major allergens of canary grass pollen. <i>Clin. Exp. Allergy</i> 25:853-865. S80654
Phleum pratense (timothy grass)	Phl p 1	27	C	X78813
	Phl p 2		C	41. Dolecek, C., Vrtala, S., Laffer, S., Steinberger, P., Kraft, D., Scheiner, O. and Valenta, R. 1993. Molecular characterization of Phl p II, a major timothy grass (Phleum pratense) pollen allergen. <i>FEBS Lett.</i> 335:299-304. X75925
	Phl p 4		P	41A. Fischer S, Grote M, Fahlbusch B, Muller WD, Kraft D, Valenta R. 1996. Characterization of Phl p 4, a major timothy

				grass (Phleum pratense) pollen allergen. J Allergy Clin Immunol 98:189-198.
	Phl p 5; Ag25	32	C	42. Matthiesen, F., and H. Lowenstein. 1991. Group V allergens in grass pollens. I. Purification and characterization of the group V allergen from Phleum pratense pollen, Phl p V. Clin. Exp. Allergy 21:297-307.
	Phl p 6		C	43. Petersen, A., Bufer, A., Schramm, G., Schlaak, M. and Becker, W.M. 1995. Characterization of the allergen group VI in timothy grass pollen (Phl p 6). II. cDNA cloning of Phl p 6 and structural comparison to grass group V. Int. Arch. Allergy Immunol. 108:55-59. Z27082
	Phl p 12; profilin		C	44. Valenta, R., Ball, T., Vrtala, S., Duchene, M., Kraft, D. and Scheiner, O. 1994. cDNA cloning and expression of timothy grass (Phleum pratense) pollen profilin in Escherichia coli: comparison with birch pollen profilin. Biochem. Biophys. Res. Commun. 199:106-118. X77583
	Phl p 13; polygalacturonase	55-60	C	AJ238848
Poa pratensis (Kentucky blue grass)	Poa p 1; group I	33	P	46. Esch, R. E., and D. G. Klapper. 1989. Isolation and characterization of a major cross-reactive grass group I allergenic determinant. Mol. Immunol. 26:557-561.
	Poa p 5	31/34	C	34. Klysner, S., K. Welinder, H. Lowenstein, and F. Matthiesen. 1992. Group V allergens in grass pollen IV. Similarities in amino acid compositions and amino terminal sequences of the group V allergens from Lolium perenne, Poa pratensis and Dactylis glomerata. Clin. Exp. Allergy 22: 491-497. 47. Olsen, E., L. Zhang, R. D. Hill, F. T. Kisil, A. H. Schon, and S. Mohapatra. 1991. Identification and characterization of the Poa p IX group of basic allergens of Kentucky bluegrass pollen. J. Immunol. 147:205-211.
Sorghum halepense (Johnson grass)	Sor h 1		C	48. Avjioglu, A., M. Singh, and R.B. Knox. 1993. Sequence analysis of Sor h 1, the group I allergen of Johnson grass pollen and its comparison to rye-grass Lol p I (abst). J. Allergy Clin. Immunol. 91:340.
TREE POLLENS				
<i>Fagales</i>				
Alnus glutinosa	Aln g 1	17	C	S50892

(alder)				
Betula verrucosa (birch)	Bet v 1	17	C	see list of isoallergens M65179
	Bet v 2; profilin	15	C	X79267
	Bet v 3	8	C	X87153/S54819
	Bet v 4		C	AF135127
	Bet v 5; isoflavone reductase homologue	33.5	C	
	Bet v 7; cyclophilin	18	C	P P81531
Carpinus betulus (hornbeam)	Car b 1	17	C	51. Larsen, J.N., P. Str�man, and H. Ipsen. 1992. PCR based cloning and sequencing of isogenes encoding the tree pollen major allergen Car b I from Carpinus betulus, hornbeam. Mol. Immunol. 29:703-711.
Castanea sativa (chestnut)	Cas s 1; Bet v 1 homologue Cas s5; chitinase	22	P	52. Kos T, Hoffmann-Sommergruber K, Ferreira F, Hirschwehr R, Ahorn H, Horak F, Jager S, Sperr W, Kraft D, Scheiner O. 1993. Purification, characterization and N-terminal amino acid sequence of a new major allergen from European chestnut pollen--Cas s 1. Biochem Biophys Res Commun 196:1086-92.
Corylus avelana (hazel)	Cor a 1	17	C	53. Breiteneder, H., F. Ferreira, K. Hoffman-Sommergruber, C. Ebner, M. Breitenbach, H. Rumpold, D. Kraft, and O. Scheiner. 1993. Four recombinant isoforms of Cor a I, the major allergen of hazel pollen. Europ. J. Biochem. 212:355-362.
Quercus alba (white oak)	Que a 1	17	P	54. Ipsen, H., and B.C. Hansen. 1991. The NH2-terminal amino acid sequence of the immunochemically partial identical major allergens of alder (Alnus glutinosa) Aln g I, birch (Betula verrucosa) Bet v I, hornbeam (Carpinus betulus) Car b I and oak (Quercus alba) Que a I pollens. Mol. Immunol. 28:1279-1288.
Cryptomeria japonica (sugi)	Cry j 1	41-45	C	55. Taniai, M., S. Ando, M. Usui, M. Kurimoto, M. Sakaguchi, S. Inouye, and T. Matuhasi. 1988. N-terminal amino acid sequence of a major allergen of Japanese cedar pollen (Cry j I). FEBS Lett. 239:329-332. 56. Griffith, I.J., A. Lussier, R. Garman, R. Koury, H. Yeung, and J. Pollock. 1993. The cDNA cloning of Cry j I, the major allergen of Cryptomeria japonica (Japanese cedar) (abst). J. Allergy Clin. Immunol. 91:339.
	Cry j 2		C	57. Sakaguchi, M., S. Inouye, M. Taniai, S. Ando, M. Usui, and T. Matuhasi. 1990. Identification of the second major allergen of Japanese cedar pollen. Allergy 45:309-312.

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Juniperus ashei (mountain cedar)	Jun a 1	43	P	P81294
	Jun a 3	30	P	P81295
Juniperus oxycedrus (prickly juniper)	Jun o 2; calmodulin-like	29	C	AF031471
Juniperus sabinoides (mountain cedar)	Jun s 1	50	P	58. Gross GN, Zimburean JM, Capra JD 1978. Isolation and partial characterization of the allergen in mountain cedar pollen. Scand J Immunol 8:437-41
Juniperus virginiana (eastern red cedar)	Jun v 1	43	P	P81825
<i>Oleales</i>				
Fraxinus excelsior (ash)	Fra e 1	20	P	58A Obispo TM, Melero JA, Carpizo JA, Carreira J, Lombardero M 1993. The main allergen of Olea europaea (Ole e I) is also present in other species of the oleaceae family. Clin Exp Allergy 23:311-316.
Ligustrum vulgare (privet)	Lig v 1	20	P	58A Obispo TM, Melero JA, Carpizo JA, Carreira J, Lombardero M 1993. The main allergen of Olea europaea (Ole e I) is also present in other species of the oleaceae family. Clin Exp Allergy 23:311-316.
Olea europea (olive)	Ole e 1;	16	C	59. Cardaba, B., D. Hernandez, E. Martin, B. de Andres, V. del Pozo, S. Gallardo, J.C. Fernandez, R. Rodriguez, M. Villalba, P. Palomino, A. Basomba, and C. Lahoz. 1993. Antibody response to olive pollen antigens: association between HLA class II genes and IgE response to Ole e I (abst). J. Allergy Clin. Immunol. 91:338. 60. Villalba, M., E. Batanero, C. Lopez-Otin, L.M. Sanchez, R.I. Monsalve, M.A. Gonzalez de la Pena, C. Lahoz, and R. Rodriguez. 1993. Amino acid sequence of Ole e I, the major allergen from olive tree pollen (Olea europaea). Europ.J. Biochem. 216:863-869.
	Ole e 2; profilin	15-18	C	60A. Asturias JA, Arilla MC, Gomez-Bayon N, Martinez J, Martinez A, Palacios R 1997. Cloning and expression of the panallergen profilin and the major allergen (Ole e 1) from olive tree pollen. J Allergy Clin Immunol 100:365-372.
	Ole e 3;	9.2		60B. Batanero E, Villalba M, Ledesma A, Puente XS, Rodriguez R. 1996. Ole e 3, an olive-tree allergen, belongs to a widespread family of pollen proteins. Eur J Biochem 241: 772-778.
	Ole e 4;	32	P	P80741

	Ole e 5; superoxide dismutase	16	P	P80740
	Ole e 6;	10	C	U86342
Syringa vulgaris (lilac)	Syr v 1	20	P	58A Obispo TM, Melero JA, Carpizo JA, Carreira J, Lombardero M 1993. The main allergen of Olea europaea (Ole e I) is also present in other species of the oleaceae family. Clin Exp Allergy 23:311-316.
MITES				
Acarus siro (mite)	Aca s 13; fatty acid-bind.prot.	14*	C	AJ006774
Blomia tropicalis (mite)	Blo t 5;		C	U59102
	Blo t 12; Bt11a		C	U27479
	Blo t 13; Bt6 fatty acid-binding prot		C	U58106
Dermatophagoides pteronyssinus (mite)	Der p 1; antigen P1	25	C	61. Chua, K. Y., G. A. Stewart, and W. R. Thomas. 1988. Sequence analysis of cDNA encoding for a major house dust mite allergen, Der p I. J. Exp. Med. 167:175-182.
	Der p 2;	14	C	62. Chua, K. Y., C. R. Doyle, R. J. Simpson, K. J. Turner, G. A. Stewart, and W. R. Thomas. 1990. Isolation of cDNA coding for the major mite allergen Der p II by IgE plaque immunoassay. Int. Arch. Allergy Appl. Immunol. 91:118-123.
	Der p 3; trypsin	28/30	C	63. Smith WA, Thomas WR. 1996. Comparative analysis of the genes encoding group 3 allergens from Dermatophagoides pteronyssinus and Dermatophagoides farinae. Int Arch Allergy Immunol 109: 133-40.
	Der p 4; amylase	60	C	64. Lake, F.R., L.D. Ward, R.J. Simpson, P.J. Thompson, and G.A. Stewart. 1991. House dust mite-derived amylase: Allergenicity and physicochemical characterisation. J. Allergy Clin. Immunol. 87:1035-1042.
	Der p 5;	14	P	65. Tovey, E. R., M. C. Johnson, A. L. Roche, G. S. Cobon, and B. A. Baldo. 1989. Cloning and sequencing of a cDNA expressing a recombinant house dust mite protein that binds human IgE and corresponds to an important low molecular weight allergen. J. Exp. Med. 170:1457-1462.
	Der p 6; chymotrypsin	25	C	66. Yasueda, H., T. Shida, T. Ando, S. Sugiyama, and H. Yamakawa. 1991. Allergenic and proteolytic properties of fourth allergens from Dermatophagoides mites. In: "Dust Mite Allergens and Asthma. Report of the 2nd international workshop" A. Todt, Ed., UCB Institute of Allergy, Brussels, Belgium, pp. 63-64.
	Der p 7;	22-28	C	67. Shen, H.-D., K.-Y. Chua, K.-L. Lin, K.-H. Hsieh, and W.R. Thomas. 1993.

				Molecular cloning of a house dust mite allergen with common antibody binding specificities with multiple components in mite extracts. Clin. Exp. Allergy 23:934-40.
	Der p 8; glutathione transferase		P	67A. O'Neil GM, Donovan GR, Baldo BA. 1994. Cloning and characterization of a major allergen of the house dust mite Dermatophagoides pteronyssinus, homologous with glutathione S-transferase. Biochim Biophys Acta, 1219:521-528.
	Der p 9; collagenolytic serine prot.		C	67B. King C, Simpson RJ, Moritz RL, Reed GE, Thompson PJ, Stewart GA. 1996. The isolation and characterization of a novel collagenolytic serine protease allergen (Der p 9) from the dust mite Dermatophagoides pteronyssinus. J Allergy Clin Immunol 98:739-47.
	Der p 10; tropomyosin	36		Y14906
	Der p 14; apolipoprotein like p		C	Epton p.c.
Dermatophagoides microceras (mite)	Der m 1;	25	P	68. Lind P, Hansen OC, Horn N. 1988. The binding of mouse hybridoma and human IgE antibodies to the major fecal allergen, Der p I of D. pteronyssinus. J. Immunol. 140:4256-4262.
Dermatophagoides farinae (mite)	Der f 1;	25	C	69. Dilworth, R. J., K. Y. Chua, and W. R. Thomas. 1991. Sequence analysis of cDNA coding for a major house dust allergen Der f I. Clin. Exp. Allergy 21:25-32.
	Der f 2;	14	C	70. Nishiyama, C., T. Yunki, T. Takai, Y. Okumura, and H. Okudaira. 1993. Determination of three disulfide bonds in a major house dust mite allergen, Der f II. Int. Arch. Allergy Immunol. 101:159-166. 71. Trudinger, M., K. Y. Chua, and W. R. Thomas. 1991. cDNA encoding the major dust mite allergen Der f II. Clin. Exp. Allergy 21:33-38.
	Der f 3;	30	C	63. Smith WA, Thomas WR. 1996. Comparative analysis of the genes encoding group 3 allergens from Dermatophagoides pteronyssinus and Dermatophagoides farinae. Int Arch Allergy Immunol 109: 133-40.
	Der f 10; tropomyosin		C	72. Aki T, Kodama T, Fujikawa A, Miura K, Shigeta S, Wada T, Jyo T, Murooka Y, Oka S, Ono K. 1995. Immunochemical characterization of recombinant and native tropomyosins as a new allergen from the house dust mite Dermatophagoides farinae. J Allergy Clin Immunol 96:74-83.
	Der f 11; paramyosin	98	C	72a
	Der f 14; Mag3, apolipoprotein		C	D17686
Euroglyphus	Eur m 14;	177	C	AF149827

maynei (mite)	apolipophorin			
Lepidoglyphus destructor (storage mite)	Lep d 2.0101;	15	C	<p>73. van Hage-Hamsten, M., T. Bergman, E. Johansson, B. Persson, H. Jornvall, B. Harfast, and S.G.O. Johansson. 1993. N-terminal amino acid sequence of major allergen of the mite lepidoglyphus destructor (abst). J. Allergy Clin. Immunol. 91:353.</p> <p>74. Varela J, Ventas P, Carreira J, Barbas JA, Gimenez-Gallego G, Polo F. Primary structure of Lep d I, the main Lepidoglyphus destructor allergen. Eur J Biochem 225:93-98, 1994.</p> <p>75. Schmidt M, van der Ploeg I, Olsson S, van Hage Hamsten M. The complete cDNA encoding the Lepidoglyphus destructor major allergen Lep d 1. FEBS Lett 370:11-14, 1995.</p>
	Lep d 2.0102;	15	C	<p>75. Schmidt M, van der Ploeg I, Olsson S, van Hage Hamsten M. The complete cDNA encoding the Lepidoglyphus destructor major allergen Lep d 1. FEBS Lett 370:11-14, 1995.</p>
ANIMALS				
Bos domesticus (domestic cattle) (see also foods)	Bos d 2; Ag3, lipocalin	20	C	<p>76. Rautiainen J, Rytönen M, Pelkonen J, Pentikainen J, Perola O, Virtanen T, Zeiler T, Mantylarvi R. BDA20, a major bovine dander allergen characterized at the sequence level is Bos d 2. Submitted.</p> <p>L42867</p>
	Bos d 4; alpha-lactalbumin	14.2	C	M18780
	Bos d 5; beta-lactoglobulin	18.3	C	X14712
	Bos d 6; serum albumin	67	C	M73993
	Bos d 7; immunoglobulin	160		<p>77. Gjesing B, Lowenstein H. Immunochemistry of food antigens. Ann Allergy 53:602, 1984.</p>
	Bos d 8; caseins	20-30		<p>77. Gjesing B, Lowenstein H. Immunochemistry of food antigens. Ann Allergy 53:602, 1984.</p>
Canis familiaris (Canis domesticus (dog))	Can f 1;	25	C	<p>78. de Groot, H., K.G.H. Goei, P. van Swieten, and R.C. Aalberse. 1991. Affinity purification of a major and a minor allergen from dog extract: Serologic activity of affinity-purified Can f I and Can f I-depleted extract. J. Allergy Clin. Immunol. 87:1056-1065.</p> <p>79. Konieczny, A. Personal communication; Immunologic Pharmaceutical Corp.</p>

	Can f 2;	27	C	78. de Groot, H., K.G.H. Goei, P. van Swieten, and R.C. Aalberse. 1991. Affinity purification of a major and a minor allergen from dog extract: Serologic activity of affinity-purified Can f I and Can f I-depleted extract. J. Allergy Clin. Immunol. 87:1056-1065. 79. Konieczny, A. Personal communication; Immunologic Pharmaceutical Corp.
	Can f ?; albumin		C	S72946
Equus caballus (domestic horse)	Equ c 1; lipocalin	25	C	U70823
	Equ c 2; lipocalin	18.5	P	79A. Bulone, V. 1998. Separation of horse dander allergen proteins by two-dimensional electrophoresis. Molecular characterization and identification of Equ c 2.0101 and Equ c 2.0102 as lipocalin proteins. Eur J Biochem 253:202-211. 79B. Swiss-Prot acc. P81216, P81217.
Felis domesticus (cat saliva)	Fel d 1; cat-1	38	C	15. Morgenstern, J.P., I.J. Griffith, A.W. Brauer, B.L. Rogers, J.F. Bond, M.D. Chapman, and M. Kuo. 1991. Amino acid sequence of Fel d I, the major allergen of the domestic cat: protein sequence analysis and cDNA cloning. Proc. Natl. Acad. Sci. USA 88:9690-9694.
Mus musculus (mouse urine)	Mus m 1; MUP	19	C	80. McDonald, B., M. C. Kuo, J. L. Ohman, and L. J. Rosenwasser. 1988. A 29 amino acid peptide derived from rat alpha 2 euglobulin triggers murine allergen specific human T cells (abst). J. Allergy Clin. Immunol. 83:251. 81. Clarke, A. J., P. M. Cissold, R. A. Shawi, P. Beattie, and J. Bishop. 1984. Structure of mouse urinary protein genes: differential splicing configurations in the 3'-non-coding region. EMBO J 3:1045-1052.
Rattus norvegicus (rat urine)	Rat n 1	17	C	82. Longbottom, J. L. 1983. Characterization of allergens from the urines of experimental animals. McMillan Press, London, pp. 525-529. 83. Laperche, Y., K. R. Lynch, K. P. Dolans, and P. Feigelsen. 1983. Tissue-specific control of alpha 2u globulin gene expression: constitutive synthesis in submaxillary gland. Cell 32:453-460.
FUNGI				
Ascomycota				
Dothidiales				

Alternaria alternata	Alt a 1;	28	C	U82633
	Alt a 2;	25	C	U87807
				U87808
	Alt a 3; heat shock protein	70	C	X78222
	Alt a 6; ribosomal protein	11	C	U87806
	Alt a 7; YCP4 protein	22	C	X78225
	Alt a 10; aldehyde dehydrogenase	53	C	X78227
				P42041
Cladosporium herbarum	Alt a 11; enolase	45	C	U82437
	Alt a 12; acid. ribosomal prot P1	11	C	X84216
	Cla h 1;	13		83a,83b
	Cla h 2;	23		83a,83b
	Cla h 3; aldehyde dehydrogenase	53	C	X78228
	Cla h 4; ribosomal protein	11	C	X78223
	Cla h 5; YCP4 protein	22	C	X78224
Eurotiales	Cla h 6; enolase	46	C	X78226
	Cla h 12; acid. ribosomal prot P1	11	C	X85180
	Asp fl 13; alkaline serine proteinase	34		84. Shen, et al. J. Allergy Clin. Immunol. 103:S157, 1999.
	Asp f 1;	18	C	83781
				S39330
	Asp f 2;	37	C	U56938
	Asp f 3; peroxisomal protein	19	C	U20722
	Asp f 4;	30	C	AJ001732
	Asp f 5; metalloprotease	42	C	Z30424
	Asp f 6; Mn superoxide dismutase	26.5	C	U53561
	Asp f 7;	12	C	AJ223315
	Asp f 8; ribosomal protein P2	11	C	AJ224333
	Asp f 9;	34	C	AJ223327
	Asp f 10; aspartic protease	34		X85092
	Asp f 11; peptidyl-prolyl isom	24		84A. Crameri R. Epidemiology and molecular basis of the involvement of Aspergillus fumigatus in allergic diseases. Contrib. Microbiol. Vol. 2, Karger, Basel (in press).
	Asp f 12; heat shock prot. P70	65	C	U92465
	Asp f 13; alkaline serine proteinase	34		84B. Shen, et al. (manuscript submitted), 1999

	Asp f 15;	16	C	AJ002026
	Asp f 16;	43	C	g3643813
	Asp f 17;	34	C	AJ224865
	Asp f 18; vacuolar serine	90		84C. Shen HD, Ling WL, Tan MF, Wang SR, Chou H, Han SIH. Vacuolar serine proteinase: A major allergen of Aspergillus fumigatus. 10th International Congress of Immunology, Abstract, 1998.
	Asp f ?;	55	P	85. Kumar, A., L.V. Reddy, A. Sochanik, and V.P. Kurup. 1993. Isolation and characterization of a recombinant heat shock protein of Aspergillus fumigatus. J. Allergy Clin. Immunol. 91:1024-1030.
	Asp f ?;		P	86. Teshima, R., H. Ikebuchi, J. Sawada, S. Miyachi, S. Kitani, M. Iwama, M. Irie, M. Ichinoe, and T. Terao. 1993. Isolation and characterization of a major allergenic component (gp55) of Aspergillus fumigatus. J. Allergy Clin. Immunol. 92:698-706.
Aspergillus niger	Asp n 14; beta-xylosidase	105	C	AF108944
	Asp n 18;	34	C	84B. Shen, et al. (manuscript submitted), 1999
	vacuolar serine proteinase			
	Asp n ?;	85	C	Z84377
Aspergillus oryzae	Asp o 2; TAKA-amylase A	53	C	D00434
	Asp o 13; alkaline serine proteinase	34	C	M33218 X17561
Penicillium brevicompactum	Pen b 13; alkaline serine Proteinase	33		86A. Shen HD, Lin WL, Tsai JJ, Liaw SF, Han SH. 1996. Allergenic components in three different species of Penicillium: crossreactivity among major allergens. Clin Exp Allergy 26:444-451.
Penicillium citrinum	Pen c 1; heat shock protein P70	70	C	U64207
	Pen c 3; peroxisomal membrane			86B. Shen, et al. Abstract; The XVIII Congress of the European Academy of Allergology and Clinical Immunology, Brussels, Belgium, 3-7 July 1999.
	protein			
	Pen c 13; alkaline serine proteinase	33		86A. Shen HD, Lin WL, Tsai JJ, Liaw SF, Han SH. 1996. Allergenic components in three different species of Penicillium: crossreactivity among major allergens. Clin Exp Allergy 26:444-451.
Penicillium notatum	Pen n 1; N-acetyl	68		87. Shen HD, Liaw SF, Lin WL, Ro LH, Yang HL, Han SH. 1995. Molecular cloning of cDNA coding for the 68 kDa allergen of Penicillium notatum using MoAbs. Clin Exp Allergy 25:350-356.
	glucosaminidase			

	Pen n 13; alkaline serine proteinase	34		89. Shen, et al. Clin. Exp. Allergy (in press), 1999.
	Pen n 18; vacuolar serine proteinase	32		89. Shen, et al. Clin. Exp. Allergy (in press), 1999.
Penicillium oxalicum	Pen o 18; vacuolar serine proteinase	34		89. Shen, et al. Clin. Exp. Allergy (in press), 1999.
Onygenales				
Trichophyton rubrum	Tri r 2;		C	90. Woodfolk JA, Wheatley LM, Piyasena RV, Benjamin DC, Platts-Mills TA.1998. Trichophyton antigens associated with IgE antibodies and delayed type hypersensitivity. Sequence homology to two families of serine proteinases. J Biol Chem 273:29489-96.
	Tri r 4; serine protease		C	90. Woodfolk JA, Wheatley LM, Piyasena RV, Benjamin DC, Platts-Mills TA.1998. Trichophyton antigens associated with IgE antibodies and delayed type hypersensitivity. Sequence homology to two families of serine proteinases. J Biol Chem 273:29489-96.
Trichophyton tonsurans	Tri t 1;	30	P	91. Deuell, B., L.K. Arruda, M.L. Hayden, M.D. Chapman and T.A.E. Platts-Mills. 1991. Trichophyton tonsurans Allergen I. J. Immunol. 147:96-101.
	Tri t 4; serine protease	83	C	90. Woodfolk JA, Wheatley LM, Piyasena RV, Benjamin DC, Platts-Mills TA.1998. Trichophyton antigens associated with IgE antibodies and delayed type hypersensitivity. Sequence homology to two families of serine proteinases. J Biol Chem 273:29489-96.
Saccharomycetales				
Candida albicans	Cand a 1	40	C	88. Shen, H.D., K.B. Choo, H.H. Lee, J.C. Hsieh, and S.H. Han. 1991. The 40 kd allergen of Candida albicans is an alcohol dehydrogenase: molecular cloning and immunological analysis using monoclonal antibodies. Clin. Exp. Allergy 21:675-681.
Candida boidinii	Cand b 2	20	C	J04984, J04985
Basidiomycota				
Basidiolaelastomycetes				
Malassezia furfur	Mal f 1;			91A. Schmidt M, Zargari A, Holt P, Lindbom L, Hellman U, Whitley P, van der Ploeg I, Harfast B, Scheynius A. 1997. The complete cDNA sequence and expression of the first major allergenic protein of Malassezia furfur, Mal f 1. Eur J Biochem 246:181-185.
	Mal f 2; MF1 peroxisomal membrane protein	21	C	AB011804
	Mal f 3; MF2 peroxisomal	20	C	AB011805

	membrane protein			
	Mal f 4,	35	C	Takesako, p.c.
	Mal f 5;	18*	C	AJ011955
	Mal f 6; cyclophilin homologue	17*	C	AJ011956
Basidiomycetes				
Psilocybe cubensis	Psi c 1; Psi c 2; cyclophilin	16		91B. Horner WE, Reese G, Lehrer SB. 1995. Identification of the allergen Psi c 2 from the basidiomycete Psilocybe cubensis as a fungal cyclophilin. Int Arch Allergy Immunol 107:298-300.
Coprinus comatus (shaggy cap)	Cop c 1;	11	C	AJ132235
	Cop c 2;			
	Cop c 3;			Brander, p.c.
	Cop c 5;			Brander, p.c.
	Cop c 7;			Brander, p.c
INSECTS				
Aedes aegyptii (mosquito)	Aed a 1; apyrase	68	C	L12389
	Aed a 2;	37	C	M33157
Apis mellifera (honey bee)	Api m 1; phospholipase A2	16	C	92. Kuchler, K., M. Gmachl, M. J. Sippl, and G. Kreil. 1989. Analysis of the cDNA for phospholipase A2 from honey bee venom glands: The deduced amino acid sequence reveals homology to the corresponding vertebrate enzymes. Eur. J. Biochem. 184:249-254.
	Api m 2; hyaluronidase	44	C	93. Gmachl, M., and G. Kreil. 1993. Bee venom hyaluronidase is homologous to a membrane protein of mammalian sperm. Proc. Natl. Acad. Sci. USA 90:3569-3573.
	Api m 4; melittin	3	C	94. Habermann, E. 1972. Bee and wasp venoms. Science 177:314-322.
	Api m 6;	7-8	P	Kettner, p.c.
Bombus pennsylvanicus (bumble bee)	Bom p 1; phospholipase	16	P	95. Jacobson, R.S., and D.R. Hoffman. 1993. Characterization of bumblebee venom allergens (abst). J. Allergy Clin. Immunol. 91:187.
	Bom p 4; protease		P	95. Jacobson, R.S., and D.R. Hoffman. 1993. Characterization of bumblebee venom allergens (abst). J. Allergy Clin. Immunol. 91:187.
Blattella germanica (German cockroach)	Bla g 1; Bd90k		C	96. Arruda LK, Vailes LD, Mann BJ, Shannon J, Fox JW, Vedvick TS, Hayden ML, Chapman MD. Molecular cloning of a major cockroach (Blattella germanica) allergen, Bla g 2. Sequence homology to the aspartic proteases. J Biol Chem 270:19563-19568, 1995.
	Bla g 2; aspartic protease	36	C	
	Bla g 4; calycin	21	C	97. Arruda LK, Vailes LD, Hayden ML, Benjamin DC, Chapman MD. Cloning of

				cockroach allergen, Bla g 4, identifies ligand binding proteins (or calycons) as a cause of IgE antibody responses. J Biol Chem 270:31196-31201, 1995.
	Bla g 5; glutathione transf.	22	C	98. Arruda LK, Vailes LD, Benjamin DC, Chapman MD. Molecular cloning of German Cockroach (Blattella germanica) allergens. Int Arch Allergy Immunol 107:295-297, 1995.
	Bla g 6; troponin C	27	C	98. Arruda LK, Vailes LD, Benjamin DC, Chapman MD. Molecular cloning of German Cockroach (Blattella germanica) allergens. Int Arch Allergy Immunol 107:295-297, 1995.
Periplaneta americana (American cockroach)	Per a 1; Cr-P11	72-78	C	98A. Wu CH, Lee MF, Liao SC. 1995. Isolation and preliminary characterization of cDNA encoding American cockroach allergens. J Allergy Clin Immunol 96: 352-9.
	Per a 3; Cr-P1		C	
	Per a 7; tropomyosin	37	C	Y14854
Chironomus thummi thummi (midges)	Chi t 1-9; hemoglobin	16	C	99. Mazur, G., X. Baur, and V. Liebers. 1990. Hypersensitivity to hemoglobins of the Diptera family Chironomidae: Structural and functional studies of their immunogenic/allergenic sites. Monog. Allergy 28:121-137.
	Chi t 1.01; component III	16	C	P02229
	Chi t 1.02; component IV	16	C	P02230
	Chi t 2.0101; component I	16	C	P02221
	Chi t 2.0102; component IA	16	C	P02221
	Chi t 3; component II-beta	16	C	P02222
	Chi t 4; component IIIA	16	C	P02231
	Chi t 5; component VI	16	C	P02224
	Chi t 6.01; component VIIA	16	C	P02226
	Chi t 6.02; component IX	16	C	P02223
	Chi t 7; component VIIB	16	C	P02225
	Chi t 8; component VIII	16	C	P02227
	Chi t 9; component X	16	C	P02228
Dolichovespula maculata (white face hornet)	Dol m 1; phospholipase A1	35	C	100. Soldatova, L., L. Kochoumian, and T.P. King. 1993. Sequence similarity of a hornet (D. maculata) venom allergen phospholipase A1 with mammalian lipases. FEBS Letters 320:145-149.
	Dol m 2; hyaluronidase	44	C	101. Lu, G., L. Kochoumian and T.P. King. Whiteface hornet venom allergen

				hyaluronidase: cloning and its sequence similarity with other proteins (abst.). 1994. J. Allergy Clin. Immunol. 93:224.
	Dol m 5; antigen 5	23	C	102. Fang, K. S. F., M. Vitale, P. Fehlner, and T. P. King. 1988. cDNA cloning and primary structure of a white-faced hornet venom allergen, antigen 5. Proc. Natl. Acad. Sci., USA 85:895-899. 103. King, T. P., D. C. Moran, D. F. Wang, L. Kochoumian, and B.T. Chait. 1990. Structural studies of a hornet venom allergen antigen 5, Dol m V and its sequence similarity with other proteins. Prot. Seq. Data Anal. 3:263-266.
Dolichovespula arenaria (yellow hornet)	Dol a 5; antigen 5	23	C	104. Lu, G., M. Villalba, M.R. Coscia, D.R. Hoffman, and T.P. King. 1993. Sequence analysis and antigen cross reactivity of a venom allergen antigen 5 from hornets, wasps and yellowjackets. J. Immunol. 150: 2823-2830.
Polistes annularis (wasp)	Pol a 1; phospholipase A1	35	P	105. King, T. P. and Lu, G. 1997. Unpublished data.
	Pol a 2; hyaluronidase	44	P	105. King, T. P. and Lu, G. 1997. Unpublished data.
	Pol a 5; antigen 5	23	C	104. Lu, G., M. Villalba, M.R. Coscia, D.R. Hoffman, and T.P. King. 1993. Sequence analysis and antigen cross reactivity of a venom allergen antigen 5 from hornets, wasps and yellowjackets. J. Immunol. 150: 2823-2830.
Polistes dominulus (Mediterranean paper wasp)	Pol d 1;	32-34	C	DR Hoffman
	Pol d 4; serine protease			DR Hoffman
	Pol d 5;			P81656
Polistes exclamans (wasp)	Pol e 1; phospholipase A1	34	P	107. Hoffman, D.R. 1992. Unpublished data.
	Pol e 5; antigen 5	23	C	104. Lu, G., M. Villalba, M.R. Coscia, D.R. Hoffman, and T.P. King. 1993. Sequence analysis and antigen cross reactivity of a venom allergen antigen 5 from hornets, wasps and yellowjackets. J. Immunol. 150: 2823-2830.
Polistes fuscatus (wasp)	Pol f 5; antigen 5	23	C	106. Hoffman, D.R. 1993. Allergens in hymenoptera venom XXV: The amino acid sequences of antigen 5 molecules and the structural basis of antigenic cross-reactivity. J. Allergy Clin. Immunol. 92:707-716.
Polistes metricus (wasp)	Pol m 5; antigen 5	23	P	106. Hoffman, D.R. 1993. Allergens in hymenoptera venom XXV: The amino acid sequences of antigen 5 molecules and the structural basis of antigenic cross-reactivity. J. Allergy Clin. Immunol. 92:707-716.
Vespa crabo	Vesp c 1;	34	P	107. Hoffman, D.R. 1992. Unpublished

(European hornet)	phospholipase			data.
	Vesp c 5.0101; antigen 5	23	C	106. Hoffman, D.R. 1993. Allergens in hymenoptera venom XXV: The amino acid sequences of antigen 5 molecules and the structural basis of antigenic cross-reactivity. J. Allergy Clin. Immunol. 92:707-716.
	Vesp c 5.0102; antigen 5	23	C	106. Hoffman, D.R. 1993. Allergens in hymenoptera venom XXV: The amino acid sequences of antigen 5 molecules and the structural basis of antigenic cross-reactivity. J. Allergy Clin. Immunol. 92:707-716.
Vespa mandarina (giant asian hornet)	Vesp m 1.01;			DR Hoffman
	Vesp m 1.02;			DR Hoffman
	Vesp m 5;			P81657
Vespula flavopilosa (yellowjacket)	Ves f 5; antigen 5	23	C	106. Hoffman, D.R. 1993. Allergens in hymenoptera venom XXV: The amino acid sequences of antigen 5 molecules and the structural basis of antigenic cross-reactivity. J. Allergy Clin. Immunol. 92:707-716.
Vespula germanica (yellowjacket)	Ves g 5; antigen 5	23	C	106. Hoffman, D.R. 1993. Allergens in hymenoptera venom XXV: The amino acid sequences of antigen 5 molecules and the structural basis of antigenic cross-reactivity. J. Allergy Clin. Immunol. 92:707-716.
Vespula maculifrons (yellowjacket)	Ves m 1; phospholipase A1	33.5	C	108. Hoffman, D. R. 1993. The complete amino acid sequence of a yellowjacket venom phospholipase (abst). J. Allergy Clin. Immunol. 91:187.
	Ves m 2; hyaluronidase	44	P	109. Jacobson, R.S., D.R. Hoffman, and D.M. Kemeny. 1992. The cross-reactivity between bee and vespid hyaluronidases has a structural basis (abst). J. Allergy Clin. Immunol. 89:292
	Ves m 5; antigen 5	23	23	104. Lu, G., M. Villalba, M.R. Coscia, D.R. Hoffman, and T.P. King. 1993. Sequence analysis and antigen cross reactivity of a venom allergen antigen 5 from hornets, wasps and yellowjackets. J. Immunol. 150: 2823-2830.
Vespula pennsylvanica (yellowjacket)	Ves p 5; antigen 5	23	C	106. Hoffman, D.R. 1993. Allergens in hymenoptera venom XXV: The amino acid sequences of antigen 5 molecules and the structural basis of antigenic cross-reactivity. J. Allergy Clin. Immunol. 92:707-716.
Vespula squamosa (yellowjacket)	Ves s 5; antigen 5	23	C	106. Hoffman, D.R. 1993. Allergens in hymenoptera venom XXV: The amino acid sequences of antigen 5 molecules and the structural basis of antigenic cross-reactivity. J. Allergy Clin. Immunol. 92:707-716.
Vespula vidua (wasp)	Ves vi 5;	23	C	106. Hoffman, D.R. 1993. Allergens in hymenoptera venom XXV: The amino acid sequences of antigen 5 molecules and the structural basis of antigenic cross-reactivity.

				J. Allergy Clin. Immunol. 92:707-716.
Vespula vulgaris (yellowjacket)	Ves v 1; phospholipase A1	35	C	105A. King TP, Lu G, Gonzalez M, Qian N and Soldatova L. 1996. Yellow jacket venom allergens, hyaluronidase and phospholipase: sequence similarity and antigenic cross-reactivity with their hornet and wasp homologs and possible implications for clinical allergy. J. Allergy Clin. Immunol. 98:588-600.
	Ves v 2; hyaluronidase	44	P	105A. King TP, Lu G, Gonzalez M, Qian N and Soldatova L. 1996. Yellow jacket venom allergens, hyaluronidase and phospholipase: sequence similarity and antigenic cross-reactivity with their hornet and wasp homologs and possible implications for clinical allergy. J. Allergy Clin. Immunol. 98:588-600.
	Ves v 5; antigen 5	23	C	104. Lu, G., M. Villalba, M.R. Coscia, D.R. Hoffman, and T.P. King. 1993. Sequence analysis and antigen cross reactivity of a venom allergen antigen 5 from hornets, wasps and yellowjackets. J. Immunol. 150: 2823-2830.
Myrmecia pilosula (Australian jumper ant)	Myr p 1,		C	X70256
	Myr p 2;		C	S81785
Solenopsis geminata (tropical fire ant)	Sol g 2;			DR Hoffman
	Sol g 4			DR Hoffman
Solenopsis invicta (fire ant)	Sol i 2;	13	C	110. Hoffman, D.R. 1993. Allergens in Hymenoptera venom XXIV: The amino acid sequences of imported fire ant venom allergens Sol i II, Sol i III, and Sol i IV. J. Allergy Clin. Immunol. 91:71-78. 111. Schmidt, M., R.B. Walker, D.R. Hoffman, and T.J. McConnell. 1993. Nucleotide sequence of cDNA encoding the fire ant venom protein Sol i II. FEBS Letters 319:138-140.
	Sol i 3;	24	C	110. Hoffman, D.R. 1993. Allergens in Hymenoptera venom XXIV: The amino acid sequences of imported fire ant venom allergens Sol i II, Sol i III, and Sol i IV. J. Allergy Clin. Immunol. 91:71-78.
	Soli 4;	13	C	110. Hoffman, D.R. 1993. Allergens in Hymenoptera venom XXIV: The amino acid sequences of imported fire ant venom allergens Sol i II, Sol i III, and Sol i IV. J. Allergy Clin. Immunol. 91:71-78.
Solenopsis saevissima (brazilian fire ant)	Sols 2;			DR Hoffman

FOODS				
Gadus callarias (cod)	Gad c 1; allergen M	12	C	<p>112. Elsayed S, Bennich H. The primary structure of Allergen M from cod. Scand J Immunol 3:683-686, 1974.</p> <p>113. Elsayed S, Aas K, Sletten K, Johansson SGO. Tryptic cleavage of a homogeneous cod fish allergen and isolation of two active polypeptide fragments. Immunochemistry 9:647-661, 1972.</p>
Salmo salar (Atlantic salmon)	Sals 1; parvalbumin	12	C	<p>X97824,</p> <p>X97825</p>
Bos domesticus (domestic cattle)	Bos d 4; alpha-lactalbumin	14.2	C	M18780
	Bos d 5; beta-lactoglobulin	18.3	C	X14712
	Bos d 6; serum albumin	67	C	M73993
	Bos d 7; immunoglobulin	160		77. Gjesing B, Lowenstein H. Immunochemistry of food antigens. Ann Allergy 53:602, 1984.
	Bos d 8; caseins	20-30		77. Gjesing B, Lowenstein H. Immunochemistry of food antigens. Ann Allergy 53:602, 1984.
Gallus domesticus (chicken)	Gal d 1; ovomucoid	28	C	<p>114. Hoffman, D. R. 1983. Immunochemical identification of the allergens in egg white. J. Allergy Clin. Immunol. 71:481-486.</p> <p>115. Langeland, T. 1983. A clinical and immunological study of allergy to hen's egg white. IV. specific IgE antibodies to individual allergens in hen's egg white related to clinical and immunological parameters in egg-allergic patients. Allergy 38:493-500.</p>
	Gald 2; ovalbumin	44	C	<p>114. Hoffman, D. R. 1983. Immunochemical identification of the allergens in egg white. J. Allergy Clin. Immunol. 71:481-486.</p> <p>115. Langeland, T. 1983. A clinical and immunological study of allergy to hen's egg white. IV. specific IgE antibodies to individual allergens in hen's egg white related to clinical and immunological parameters in egg-allergic patients. Allergy 38:493-500.</p>
	Gald 3; conalbumin (Ag22)	78	C	114. Hoffman, D. R. 1983. Immunochemical identification of the allergens in egg white. J. Allergy Clin. Immunol. 71:481-486.

				115. Langeland, T. 1983. A clinical and immunological study of allergy to hen's egg white. IV. specific IgE antibodies to individual allergens in hen's egg white related to clinical and immunological parameters in egg-allergic patients. Allergy 38:493-500.
	Gald 4; lysozyme	14	C	114. Hoffman, D. R. 1983. Immunochemical identification of the allergens in egg white. J. Allergy Clin. Immunol. 71:481-486. 115. Langeland, T. 1983. A clinical and immunological study of allergy to hen's egg white. IV. specific IgE antibodies to individual allergens in hen's egg white related to clinical and immunological parameters in egg-allergic patients. Allergy 38:493-500.
	Gal d 5; serum albumin	69	C	X60688
Metapenaeus ensis (shrimp)	Met e 1; tropomyosin		C	U08008
Penaeus aztecus (shrimp)	Pen a 1; tropomyosin	36	P	116. Daul, C.B., M. Slattery, J.E. Morgan, and S.B. Lehrer. 1993. Common crustacea allergens: identification of B cell epitopes with the shrimp specific monoclonal antibodies. In: "Molecular Biology and Immunology of Allergens" (D. Kraft and A. Schon, eds.). CRC Press, Boca Raton. pp. 291-293.
Penaeus indicus (shrimp)	Pen i 1; tropomyosin	34	C	117. K.N. Shanti, B.M. Martin, S. Nagpal, D.D. Metcalfe, P.V. Subba Rao. 1993. Identification of tropomyosin as the major shrimp allergen and characterization of its IgE-binding epitopes. J. Immunol. 151:5354-5363.
Todarodes pacificus (squid)	Tod p 1; tropomyosin	38	P	117A. M. Miyazawa, H. Fukamachi, Y. Inagaki, G. Reese, C.B. Daul, S.B. Lehrer, S. Inouye, M. Sakaguchi. 1996. Identification of the first major allergen of a squid (Todarodes pacificus). J. Allergy Clin. Immunol. 98:948-953.
Haliotis Midiae (abalone)	Hal m 1	49	-	117B. A. Lopata et al. 1997. Characteristics of hypersensitivity reactions and identification of a unique 49 kDa IgE binding protein (Hal-m-1) in Abalone (Haliotis midiae). J. Allergy Clin. Immunol. Submitted.
Apium graveolens (celery)	Api g 1; Bet v 1 homologue	16*	C	Z48967
	Api g 4; profilin			AF129423
	Api g 5;	55/58	P	P81943

Brassica juncea (oriental mustard)	Bra j 1; 2S albumin	14	C	118. Monsalve, R.I., M.A. Gonzalez de la Pena, L. Menendez-Arias, C. Lopez-Otin, M. Villalba, and R. Rodriguez. 1993. Characterization of a new mustard allergen, Bra j 1E. Detection of an allergenic epitope. Biochem. J. 293:625-632.
Brassica rapa (turnip)	Bra r 2; prohevein-like protein	25	?	P81729
Hordeum vulgare (barley)	Hor v 1; BMAI-1	15	C	119. Mena, M., R. Sanchez-Monge, L. Gomez, G. Salcedo, and P. Carbonero. 1992. A major barley allergen associated with baker's asthma disease is a glycosylated monomeric inhibitor of insect alpha-amylase: cDNA cloning and chromosomal location of the gene. Plant Molec. Biol. 20:451-458.
Zea mays (maize, corn)	Zea m 14; lipid transfer prot.	9	P	P19656
Corylus avellana (hazelnut)	Cor a 1.0401; Bet v 1 homologue	17	C	AF136945
Malus domestica (apple)	Mal d 1; Bet v 1 homologue		C	X83672
	Mal d 3; lipid transfer protein	9	C	Pastorello
Pyrus communis (pear)	Pyr c 1; Bet v 1 homologue	18	C	AF05730
	Pyr c 4; profilin	14	C	AF129424
	Pyr c 5; isoflavone reductase			
	homologue	33.5	C	AF071477
Oryza sativa (rice)	Ory s 1;		C	U31771
Persea americana (avocado)	Pers a 1; endochitinase	32	C	Z78202
Prunus armeniaca (apricot)	Pru ar 1; Bet v 1 homologue		C	U93165
	Pru ar 3; lipid transfer protein	9	P	
Prunus avium (sweet cherry)	Pru av 1; Bet v 1 homologue		C	U66076
	Pru av 2; thaumatin homologue		C	U32440
	Pru av 4; profilin	15	C	AF129425
Prunus persica (peach)	Pru p 3; lipid transfer protein	10	P	P81402
Sinapis alba (yellow mustard)	Sin a 1; 2S albumin	14	C	120. Menendez-Arias, L., I. Moneo, J. Dominguez, and R. Rodriguez. 1988. Primary structure of the major allergen of yellow mustard (Sinapis alba L.) seed, Sin a I. Eur. J. Biochem. 177:159-166.
Glycine max (soybean)	Gly m 1.0101; HPS	7.5	P	121. Gonzalez R, Varela J, Carreira J, Polo F. Soybean hydrophobic protein and soybean hull allergy. Lancet 346:48-49, 1995.

	Gly m 1.0102; HPS	7	P	121. Gonzalez R, Varela J, Carreira J, Polo F. Soybean hydrophobic protein and soybean hull allergy. Lancet 346:48-49, 1995.
	Gly m 2	8	P	A57106
	Gly m 3; profilin	14	C	AJ223982
Arachis hypogaea (peanut)	Ara h 1; vicilin	63.5	C	L34402
	Ara h 2; conglutin	17	C	L77197
	Ara h 3; glycinin	14	C	AF093541
	Ara h 4; glycinin	37	C	AF086821
	Ara h 5; profilin	15	C	AF059616
	Ara h 6; conglutin homolog	15	C	AF092846
	Ara h 7; conglutin homolog	15	C	AF091737
Actinidia chinensis (kiwi)	Act c 1; cysteine protease	30	P	P00785
Solanum tuberosum (potato)	Sol t 1; patatin	43	P	P15476
Bertholletia excelsa (Brazil nut)	Ber e 1; 2S albumin	9	C	P04403, M17146
Juglans regia (English walnut)	Jug r 1; 2S albumin	44	C	U66866
	Jug r 2; vicilin		C	AF066055
Ricinus communis (Castor bean)	Ric c 1; 2S albumin		C	P01089
OTHERS				
Anisakis simplex (nematode)	Ani s 1	24	P	A59069
	Ani s 2; paramyosin	97	C	AF173004
Ascaris suum (worm)	Asc s 1;	10	P	122. Christie, J. F., B. Dunbar, I. Davidson, and M. W. Kennedy. 1990. N-terminal amino acid sequence identity between a major allergen of Ascaris lumbricoides and Ascaris suum and MHC-restricted IgE responses to it. Immunology 69:596-602.
Aedes aegyptii (mosquito)	Aed a 1; apyrase	68	C	L12389
	Aed a 2;	37	C	M33157
Hevea brasiliensis (rubber)	Hev b 1; elongation factor	58	P	123. Czuppon AB, Chen Z, Rennert S, Engelke T, Meyer HE, Heber M, Baur X. The rubber elongation factor of rubber trees (Hevea brasiliensis) is the major allergen in latex. J Allergy Clin Immunol 92:690-697, 1993. 124. Attanayaka DPSTG, Kekwick RGO, Franklin FCH. 1991. Molecular cloning and nucleotide sequencing of the rubber elongation factor gene from hevea

				brasiliensis. Plant Mol Biol 16:1079-1081.
	Hev b 2; (1,3-glucanase	58	P	123. Czuppon AB, Chen Z, Rennert S, Engelke T, Meyer HE, Heber M, Baur X. The rubber elongation factor of rubber trees (Hevea brasiliensis) is the major allergen in latex. J Allergy Clin Immunol 92:690-697, 1993. 124. Attanayaka DPSTG, Kekwick RGO, Franklin FCH. 1991. Molecular cloning and nucleotide sequencing of the rubber elongation factor gene from hevea brasiliensis. Plant Mol Biol 16:1079-1081.
	Hev b 2; (1,3-glucanase	34/36	C	125. Chye ML, Cheung KY. 1995. (1,3-glucanase is highly expressed in Laticifers of Hevea brasiliensis. Plant Mol Biol 26:397-402.
	Hev b 3	24	P	126. Alenius H, Palosuo T, Kelly K, Kurup V, Reunala T, Makinen-Kiljunen S, Turjanmaa K Fink J. 1993. IgE reactivity to 14-kD and 27-kD natural rubber proteins in Latex-allergic children with Spina bifida and other congenital anomalies. Int Arch Allergy Immunol 102:61-66. 127. Yeang HY, Cheong KF, Sunderasan E, Hamzah S, Chew NP, Hamid S, Hamilton RG, Cardoso MJ. 1996. The 14.6 kD (REF, Hev b 1) and 24 kD (Hev b 3) rubber particle proteins are recognized by IgE from Spina Bifida patients with Latex allergy. J Allerg Clin Immunol in press.
	Hev b 4; component of microhelix protein complex	100/1 10/11 5	P	128. Sunderasan E, Hamzah S, Hamid S, Ward MA, Yeang HY, Cardoso MJ. 1995. Latex B-serum (-1,3-glucanase (Hev b 2) and a component of the microhelix (Hev b 4) are major Latex allergens. J nat Rubb Res 10:82-99.
	Hev b 5	16	C	U42640
	Hev b 6.01 hevein precursor	20	C	M36986/p02877
	Hev b 6.02 hevein	5	C	M36986/p02877
	Hev b 6.03 C-terminal fragment	14	C	M36986/p02877 U80598
	Hev b 7; patatin homologue	46	C	Y15042
	Hev b 8; profilin	14	C	AJ132580/AJ132581
	Hev b 9; enolase	51	C	
	Hev b 10; Mn- superoxide dismut	26	C	AJ249148
Ctenocephalides felis felis	Cte f 1;	-	-	-
	Cte f 2; M1b	27	C	AF231352

(cat flea)				
Homo sapiens (human autoallergens)	Hom s 1;	73*	C	Y14314
	Hom s 2;	10.3*	C	X80909
	Hom s 3;	20.1*	C	X89985
	Hom s 4;	36*	C	Y17711
	Hom s 5;	42.6*	C	P02538

35. (Original) The composition of claim 34, wherein the wild-type allergen is found in nature in foods, venoms, or latex.
36. (Original) The composition of claim 34, wherein the wild-type allergen is found in nature in a food selected from the group consisting of peanuts, milk, eggs, seafood, nuts, dairy products, and fruit.
37. (Withdrawn) The composition of claim 34, wherein the wild-type allergen is found in nature in bee venom.
38. (Previously presented) The composition of claim 34, wherein the wild-type allergen is an Ara h 1, Ara h 2, or Ara h 3 protein with an amino acid sequence that is encoded by the nucleotide sequence of SEQ ID NO:1, SEQ ID NO:2, or SEQ ID NO:3.
39. (Previously presented) The composition of claim 34, wherein the sequence of the modified allergen differs from the sequence of the wild-type allergen by one or more amino acid deletions, substitutions or additions within an IgE binding site of the wild-type allergen.
40. (Previously presented) The composition of claim 39, wherein the sequence of the modified allergen lacks an IgE binding site of the wild-type allergen sequence.
41. (Original) The composition of claim 34, wherein the modified allergen is located in the cytoplasm of the dead *E. coli*.
42. (Original) The composition of claim 34, wherein the modified allergen is located in the periplasm of the dead *E. coli*.
43. (Original) The composition of claim 34, wherein the modified allergen cannot be

detected by antibody binding without disrupting the dead *E. coli*.

44. (Original) The composition of claim 34, wherein the composition is formulated for rectal administration.
45. (Previously presented) The composition of claim 34, wherein the dead *E. coli* was heat-killed.
46. (Previously presented) The composition of claim 34, wherein the dead *E. coli* was killed by chemical treatment.
47. (Previously presented) The composition of claim 44, wherein the dead *E. coli* was killed using a chemical selected from the group consisting of iodine, bleach, ozone, and alcohol.
48. (Previously presented) The composition of claim 34, wherein the composition is formulated for mucosal administration.
49. (Previously presented) The composition of claim 34, wherein the composition is formulated for oral administration.